

SN: 10/088,058

Art Unit: 1714

Amendments to the Claims

1. (Currently amended) An aqueous liquid composition of matter suitable for treating a metal substrate comprising water and the following components:
 - (a) from 20 to ~~60~~70 percent by weight of non-volatile constituents of a component selected from a group consisting of urethane resins, and epoxy resins;
 - (b) from ~~45~~20 to 60 percent by weight of non-volatile constituents of a component of silane coupling agent; and
 - (c) from 10 to 40 percent by weight of a component of dispersed solid non-volatile particles with a mean particle size of 1.0 μm or less,all of the percentage values specified above for components (a), (b), and (c) being percentages of only the non-volatiles content of said aqueous liquid composition.
2. (Previously presented) A liquid composition according to claim 1, wherein component (c) is selected from the group consisting of plastic pigments, phosphorus-containing anti-rust pigments, colloidal-sized silica, alumina, zirconia, and titania.
3. (Original) A liquid composition according to claim 2, in which the pH is in a range from 2 to 10.
4. (Original) A liquid composition according to claim 1, in which the pH is in a range from 2 to 10.
5. (Previously presented) A process for making a coated metal substrate, said process comprising operations of:
 - (I) forming a layer of a liquid composition according to claim 4 over at least one of a metallic surface of said metal substrate, a surface formed by chemical plating on a metallic surface of said metal substrate, or a phosphate conversion coating formed on a metallic surface of said metal substrate, said layer of said liquid composition having a non-volatiles content that is from 0.05 to 1.0 g/m^2 ; and
 - (II) drying said layer of liquid composition, without removing any of said liquid by any other method than volatilization, to form a dry coating.

6. (Previously presented) A process for making a coated metal substrate, said process comprising operations of:

- (I) forming a layer of a liquid composition according to claim 3 over at least one of a metallic surface of said metal substrate, a surface formed by chemical plating on a metallic surface of said metal substrate, or a phosphate conversion coating formed on a metallic surface of said metal substrate, said layer of said liquid composition having a non-volatiles content that is from 0.05 to 1.0 g/m²; and
- (II) drying said layer of liquid composition, without removing any of said liquid by any other method than volatilization, to form a dry coating.

7. (Previously presented) A process for making a coated metal substrate, said process comprising operations of:

- (I) forming a layer of a liquid composition according to claim 2 over at least one of a metallic surface of said metal substrate, a surface formed by chemical plating on a metallic surface of said metal substrate, or a phosphate conversion coating formed on a metallic surface of said metal substrate, said layer of said liquid composition having a non-volatiles content that is from 0.05 to 1.0 g/m²; and
- (II) drying said layer of liquid composition, without removing any of said liquid by any other method than volatilization, to form a dry coating.

8. (Previously presented) A process for making a coated metal substrate, said process comprising operations of:

- (I) forming a layer of a liquid composition according to claim 1 over at least one of a metallic surface of said metal substrate, a surface formed by chemical plating on a metallic surface of said metal substrate, or a phosphate conversion coating formed on a metallic surface of said metal substrate, said layer of said liquid composition having a non-volatiles content that is from 0.05 to 1.0 g/m²; and
- (II) drying said layer of liquid composition, without removing any of said liquid by any other method than volatilization, to form a dry coating.

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9. (Previously presented) An article of manufacture comprising a coated metal surface formed by a process according to claim 5.
10. (Previously presented) An aqueous liquid composition of matter comprising water and the following components:
- (a) from 30 to 60 percent by weight of non-volatile constituents of a component selected from a group consisting of urethane resins, epoxy resins, and acrylic resins;
 - (b) from 22 to 38 percent by weight of non-volatile constituents of a component of silane coupling agent; and
 - (c) from 10 to 35 percent by weight of a component of dispersed solid non-volatile particles with a mean particle size of 1.0 μm or less, said particles being selected from the group consisting of plastic pigments, phosphorus containing anti-rust pigments, alumina, zirconia, and titania, all of the percentage values specified above for components (a), (b), and (c) being percentages of only the non-volatiles content of said aqueous liquid composition and said aqueous liquid composition having a pH in a range from 2 to 10.
11. (Previously presented) A process for making a coated metal substrate, said process comprising operations of:
- (I) forming a layer of a liquid composition according to claim 10 over at least one of a metallic surface of said metal substrate, a surface formed by chemical plating on a metallic surface and or said metal substrate, and a phosphate conversion coating formed on a metallic surface of said metal substrate, said layer of said liquid composition having a non-volatiles content that is from 0.05 to 0.5 g/m²; and
 - (II) drying said layer of liquid composition, without removing any of said liquid by any other method than volatilization, to form a dry coating.
12. (Previously presented) The process of claim 11 wherein said metal substrate reaches a peak temperature during step 11 of from 50 to 250°C.

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13. (New) A liquid composition according to claim 1, wherein component (c) is selected from the group consisting of colloidal-sized silica, alumina, zirconia, and titania.

14. (New) A liquid composition according to claim 1, further comprising component (d) a pH adjusting material, in an amount sufficient to adjust pH of the composition to between 2 and 10.

15. (New) An aqueous liquid composition of matter suitable for treating a metal substrate comprising water and the following components:

- (a) from 20 to 70 percent by weight of non-volatile constituents of a component selected from a group consisting of urethane resins, epoxy resins, and acrylic resins;
- (b) from 15 to 60 percent by weight of non-volatile constituents of a component of silane coupling agent; and
- (c) from 10 to 40 percent by weight of a component of dispersed solid non-volatile particles selected from the group consisting of alumina, zirconia, and titania with a mean particle size of 1.0 μm or less,

all of the percentage values specified above for components (a), (b), and (c) being percentages of only the non-volatiles content of said aqueous liquid composition.

16. (New) A liquid composition according to claim 15, wherein component (c) additionally comprises colloidal silica, plastic pigments and/or phosphorus-containing anti-rust pigments.

17. (New) A liquid composition according to claim 15, further comprising component (d) a pH adjusting material, in an amount sufficient to adjust pH of the composition to between 2 and 10.

18. (New) A liquid composition according to claim 17, wherein component (d) is selected from the group consisting of organic acids, ammonia and amine compounds.

19. (New) A liquid composition according to claim 1, wherein component (d) is selected from the group consisting of organic acids, ammonia and amine compounds.